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EDITORIAL

THE BILL IS DEAD—LONG LIVE THE BILL!

IN an editorial which appeared upon these pages a few months ago prediction was made that the Tugwell Food and Drug bill would suffer much and dumbly before the perspired and inspired legislators and agitators at Washington were through operating with it. One might now state with surgical triteness, but with a touch of tenderness, too, that the operation was a bright success though the poor patient breathes no more.

Yet out of the Tugwellian cinders has risen a splendid sublimate, which when finally condensed on the cool, calm dome of reason, may well provide the very kind of brand new law that now is so sadly needed.

Certainly the old Food and Drug Law of 1906 has lost its teeth and talons—and it has already been so punctured and plastered with petty additions and changes that it is now a mooter time for one amen and not for more amendments. A brand new bill is bound to be better.

And so we wring out the old and ring in the new, with

The Bill is dead
—Long live the Bill.

—the new bill—whatever bill it be, providing it be fair and fine and final in all its jurisdictions.

Convinced for years of the need for lustier laws to regulate the manufacture, sale and advertising of foods and drugs and the comic cosmetics, we see in our present day quackeries and in their downright deceitful promotion more need than ever of the public's protection by law.

Who has not been nauseated to the point of fluent emesis in the past few months by the ridiculous barrage of advertising copy massed on the printed page, messed through the ether, and blemishing our spring-blessed landscapes with its hideous hallelujahs?

And any law that will hinder this blaspheming, let alone the other evils incidental to the disposal of foods, drugs and beauty balms, is a worthy addition to our legal armory.

Witness these asininities and absurdities which have but recently reached our attention—

EXHIBIT A.

"Baking soda, or Bicarbonate of Soda, is a byproduct of washing soda known as Sodium Bicarbonate. It is so unstable that heat, moisture and acids will decompose it and often return it to its former caustic state, and salt. The average person does not know he has an acid condition in its infancy because the muscles are first to absorb the acid, then the bones, afterwards the fat becomes acidulated and last of all, the blood. When the blood becomes acid, the person dies.

Neutratone is a food that will reduce an acid condition. It contains no drug whatsoever. It often takes the place of acid fruits. There are some people who cannot use fruits. It seems that the organic fruit acid cannot always be broken up. *Neutratone* will take its place. It is much cheaper than fruit and can be used in water or soup. If used daily as one uses bread it will have a beneficial effect on the cells of the body. *Neutratone* not only contains organic lime, but also contains organic copper, which is now claimed to be important in the manufacture of red corpuscles. The beauty of using foods containing organic mineral salts is that no matter how much you use they are beneficial. It seems we do not get enough of them. If we should use too much the body will eliminate it. Whereas, the continuous use of inorganic minerals in time becomes harmful, as they seem to accumulate in the tissue cells of the body.

Neutratone can also be used as a nose gargle; in enemas for intestinal purposes; in the douche for female purposes. It often relieves the acid irritations in hay fever. It helps to neutralize the acids usually found in rheumatism and arthritis."

From an advertising sheet distributed by The Miracle Health Food Co., of Philadelphia.

EXHIBIT B.

"The latest German Achievement in Medical Science, a New Therapy

GERMAN FRUIT SALTS

The newest, most efficient method treating the CAUSE of any disease instead of the symptom only as per old methods. It is the product of 25 years research work and proof of its effectiveness are 22,000 testimonials, each and every case called incurable. Some of my testimonials are under OATH. The method is for any disease as stated below.

The Therapy is composed of 13 preparations, designated by numbers. Briefly they are:

No. 1—All nerve disorders, etc.
No. 2—All skin disorders, etc.
No. 3—Diseases of mucous membranes, etc.
No. 4—Diseases of blood vessels, etc.
No. 5—Heart weakness, heart disorders, etc.
No. 6—Diabetes, goitre, etc.
No. 7—Rheumatism, kidney, bladder, gall stones.
No. 8—Stomach, liver, intestinal disorders, etc.
No. 9—Muscle weakness, fatigue.
No. 10—Debility of vessels.
No. 11—Kidney disorders, dropsy, etc.
No. 12—Dropped organs, lung, stomach, liver, uterus, rupture, etc.
No. 13—Anti-fat.

IN DIABETES, RESULTS ARE POSITIVE

No Insulin, a drug that will poison the organism, so stated by German scientists. No amputation of limbs or toes. Free of pains, boils, sores, etc., in a brief time."—*et cetera—ad nauseam.*

Write to H. Landgraf, 1233 W. Huntingdon St., Philadelphia, Pa.

EXHIBIT C.

THE LATEST GIFT OF SCIENCE TO MANKIND

Its present form, VIBRA CHAIN, the necklace that is more than a piece of jewelry, was designed to bring to the public a simple and convenient means of guarding the human body from much of the suffering and cause of the common disorders by controlling natural vibrations and radiations.

VIBRA CHAIN CO. OF PHILADELPHIA
504 Weightman Building, 1524 Chestnut Street
Philadelphia, Pa.

And if the Copeland bill* S. 2800 when passed will prove effective in exterminating frauds of the nature exemplified above and without working undue hardships on fair and honest enterprises it merits the support of every substantial citizen.

IVOR GRIFFITH.

*S. 2800—A Bill to Prevent the Manufacture, Shipment and Sale of Adulterated or Misbranded Food, Drink, Drugs, and Cosmetics, and to Regulate Traffic Therein; to Prevent the False Advertisement of Food, Drink, Drugs, and Cosmetics; and For Other Purposes.

ORIGINAL ARTICLES

THE STORY OF CERATES AND OINTMENTS

By John E. Kramer, Registrar

Philadelphia College of Pharmacy and Science

DOWN through the ages, since that ancient day when man first complained of being ill, to this marvelous age of modern medicine, pills, plasters, ointments and cerates have survived as the chief methods of administering drugs (1). There shall be considered here, in order, some historical facts, uses, manufacture, oddities and statistics concerning this pair of pharmaceutical preparations, cerates and ointments. Although the topic is seemingly not a deep one (being merely on the surface, as a colleague remarked upon learning the subject of this work), investigation proves it to be far-reaching, penetrating deeper than one would suspect.

The name ointment, or unguent, is from a series of similar Latin words, the verb "ungo", to smear; the verb "unguento", to anoint; and the nouns "unguen", a fat; and "unguentum", an ointment. The French for anoint is "oindre", and an ointment is "onguent". The Greek word "miron" means ointment, from which is derived the term myrepsus, applied to an ointment maker.

Ointments, in the days of the Greeks and the Romans, generally were liquids, the name applying to any preparation containing more than an oil only (2). Cerates were similar to ointments, but made to a harder consistency by the incorporation of wax, hence the name, from the Latin "cera", meaning wax.

A Roman "amphora", a two-handled vessel of oblong shape, used by the ancients to hold wine, and other liquid or plastic contents, was found in the course of excavation at Lugano, with its contents of a fairly soft, unctuous substance having the odor of storax and turpentine. The author of the story of the discovery, L. Reuter, has been able to identify this with certainty as being a cosmetic ointment. It was found, upon analysis, to contain beeswax, some animal fat, turpentine, oleoresin, storax and henna. Doubtless, it was the toilet cream of a fashionable Roman lady (3).

The Ebers Papyrus, dating back to 1552 B. C., has, as one of its prescriptions, an inunction containing frankincense, cumin, some unidentifiable berries and goosegrease, to be used as an external application for headache (4).

The Bible makes numerous references to ointments. In Matthew, XXVI, 6 to 11, the story is told of the woman who poured the contents of an alabaster box on Christ's head as he was partaking of a meal in the home of Simon, the leper, in Bethany. The box was filled with spikenard ointment, a very precious and costly preparation from the "jatama" of the Hindus, a species of valerian, and had cost the woman, in all probability, every bit of money she had. When her extravagance was questioned by Jesus' disciples, with the thought that the money might better have been used for charity, he gave his very famous reply, "The poor always ye have with you, but me ye have not always". Similar stories are recounted in John XII, 3, and Luke VII, 37, 38.

Ecclesiastes X, 1, contains the passage "Dead flies cause the ointment of the apothecary to send forth a stinking savour, so doth a little folly him that is in reputation for wisdom and honour." Ecclesiastes VII, 1, reads, "A good name is better than precious ointment", while Proverbs, XXVII, 9, states that "Ointment and perfume rejoice the heart."

In Exodus XXX, 22 to 33, the Lord commands Moses to have prepared, "according to the art of the apothecary," an ointment for holy rites. It contained myrrh, 500 shekels; sweet cinnamon, 250 shekels; sweet calamus, 250 shekels; cassia, 500 shekels; and olive oil, 1 hin. A shekel was the equivalent of about 15 pounds, and a hin contained five and a half quarts.

In medieval times, through the Dark Ages, the monks were the pharmacists and physicians, too, and the influence of their religious life is reflected in the formulation of an Ointment of the Twelve Apostles, which contained twelve important ingredients, with directions for a prayer or psalm to be repeated during the incorporation of these medicaments. The psalm or prayer, however, was more for the sake of reasonably accurate timing, to insure complete admixture, rather than for piety, as clocks and timepieces were not in vogue in that day (4).

Ceratum Infrigidans, the forerunner of our modern cold cream, was attributed to Galen, in the Second Century, and for many centuries after, supreme authority in medicine and pharmacy, as his most famous preparation (4).

Paracelsus, that dashing, roaming, writing, radical pharmacist-physician of the sixteenth century, devised an Unguentum Armarum,

or Paracelsan Weapon Salve, to be applied to the sword or weapon causing a wound, and by a magnetic current through the air was supposed to cure the wound. The only direct care to the injury was the act of cleansing in clean, cold water and wrapping in clean linen. Preparations of this type were called sympathetic remedies, and in the light of the medical care of today, the patient needed much sympathy (4).

In the London Pharmacopœia of 1650 is a preparation called Citrine Ointment, unlike the present ointment of the same name in that it is without mercury, but contains white coral, limpet shells, tragacanth, quartz, white marble and white lead, in a very complicated formula (5). The present Citrine Ointment was originally Singleton's Golden Eye Ointment, a proprietary of the eighteenth century (4).

The eighteenth century also saw the invention of Calamine, or Turner's Cerate, by Daniel Turner, M. D., a London surgeon. The first Edinburgh Pharmacopœia of 1722 contained an Unguentum Opodeldoch, composed of a number of drugs, camphor and soap (4).

An interesting news note tells how the Arabs used mercury in ointments and plasters to treat skin diseases. The same article recounts the story of Milton Franken, a druggist of Cincinnati, who is said to have been one of the first to make yellow oxide of mercury ointment. In 1892, under the direction of Dr. W. W. Seeley, Franken made the first opthalmic ointment of yellow oxide of mercury, with a strength of 2 per cent., and in five-pound lots. The price of this preparation was $5 per pound. Dr. Seeley journeyed to London to lecture on the subject of skin diseases, and introduced the ointment. The British pharmacists, however, were unable to produce a correct or satisfactory product, and Mr. Franken was cabled a request to send a two-ounce jar for demonstration. Larger lots were later sent. The failure of the English apothecaries was attributed to insufficient trituration (6).

So much for the history of ointments and cerates. It can be readily seen that they have been handed down through many generations. Now to see what they are, their uses and how they are made.

Ointments are pedagogically described as preparations containing fatty or oily bases into which a medicament or a number of medicaments have been incorporated, and are intended for external use only. Cerates are similar preparations, but contain wax, making

them of more firm consistence. Ointments melt at ordinary body temperature, but cerates do not. When applied to the body surface, the medicament of the ointment or the cerate is absorbed through the skin. Obviously, a certain amount of rubbing assists the skin in its absorption task, with the medicaments contained in the softer ointments having more penetration than the harder cerates. Therefore, while the active ingredients in most ointments and cerates are for local effect, systemic medicines are never applied in the form of cerates (7).

Ointments are made in three varying manners—by fusion, by incorporation, and by chemical reaction. Cerates are made by only two methods—fusion and incorporation. Iodine, very often prescribed in ointments, produces an undesired chemical reaction with metal utensils, necessitating the use of rubber spatulas in the manipulation of incorporation (8).

The chief purpose of many ointments, as mentioned above, is to obtain the action of the incorporated medicament by absorption through the skin. It has been found by Bollinger that absorption takes place in varying ratios according to the base used (9). Therefore, the base is a great factor in the success of an ointment or cerate.

Bases are divided into three classes:—

1. Endermatic—for absorption into the system, wool fat or lanolin being examples.

2. Dermatic—permitting absorption into tissues, but not into the circulatory system. Mixtures of petrolatum and animal fats are members of this group.

3. Epidermatic—for local surface use only and where absorption is not desired. Petrolatum is an example of this class (7).

Some of the bases commonly used, and their properties, are listed here—

	Odor	Consistence	Stability	Capacity for liquids
Lard	Characteristic	Very soft	Becomes rancid	Very small
Suet	Characteristic	Rather soft	Becomes rancid	Very small
Petrolatum	None	Soft	Stable	Small
Paraffin ointment	None	Soft	Stable	Small
Adeps lanae	Characteristic	Greasy and sticky	Becomes rancid	Up to 200%

(10)

Fiero states that hydrogenated oil, with an Iodine number of 75, appears to be a good substitute for lard as a base, as, on test, after twenty-five weeks of exposure to air and heat, no rancidity is developed (11). Bases containing water are better carriers for antiseptics because they are more readily absorbed (12).

In yellow ointment 5 per cent. or more of the benzoinated lard may be replaced by white wax in southern latitudes and in heated seasons in other localities (13). Caution must be taken with all ointments as to weather conditions and storage in heated places.

C. T. George, after a series of experiments in 1886, erroneously thought that petroleum compounds as bases sometimes form oleates with metals or metallic oxides (4). This is obviously impossible.

Simple cerate is advanced by Z. W. Sloan as being well adapted for readily decomposable or deliquescent substances such as silver nitrate, gold chloride, potassium permanganate and others. The quantity required as a base is small and the mass produced is smooth and plastic (15).

The foregoing cautions and facts show that the selection of a base is a very important consideration in the manufacture of a good ointment. It must also be borne in mind that the fusing points of ointments should be but a little higher than body temperature, to insure rapid action (16). The fineness of the active ingredient is also a vital matter in ointment preparation. Fritz Heideberg and Charles E. Vanderkleed have used the microscope to good advantage in determining whether or not this requirement had been met (17).

When the incorporation method is used in the manufacture of these preparations, a slab of glass, marble, or some like substance is used as the surface upon which to do the work. Joseph W. England reports an ointment block, composed of sheets of parchment paper in a close-set bundle, each sheet to be torn off as used (18).

In dispensing cerates and ointments, boxes always seem to have been the most popular containers. This is true from the amphora of Roman times, to 1840, when records were made of the use of poplar wood in the manufacture of boxes. However, the box wood shrank, upon long contact with the ointment, while the top retained its size, and the lid and box did not, from then on, coincide in contour. Hence the discarding of this type of container. Professor Joseph P. Remington, beloved dean of American pharmacists, then suggested collapsible metal tubes, and the idea has met with increas-

ing favor to the present time, when we find tubes much in vogue. The period of 1916-17 saw the greatest agitation along this line. The collapsible tube method, when first brought forward, was met with the query of how to get the ointment into the tube. This problem was solved by placing the mixture to be dispensed on a piece of impervious paper, and then sliding the paper into the tube, clamping the end shut (19).

Rigid tin, porcelain, glass and other materials are now used to make ointment boxes. Dr. P. G. Unna describes ointment pencils as a method of dispensing (20), and in 1901 we find that bandages, saturated with ointments, were in style (21).

In this same type of preparation may be classified "ointment gelatins", recommended by M. Pelagatti, and containing white zinc gelatin. This is a non-hardening preparation, and may be kept in paraffin paper (22).

Steatina are preparations about the consistency of wax, to be used externally in place of ointments and plasters. These were originally called cerates, but, although of the consistency of wax, they contain no wax, and the name was changed (23).

Unna applies the term "skin varnish" to preparations used in dermatological practice to form a thin covering over the skin. The principal bases are Bassorin Varnish, Casein Varnish, Amber Varnish and many others (24).

Preparations such as ointments which would naturally assume the color of the base or the ingredients, whichever were the darker, can be colored a beautiful green, if so desired, by the addition of an alcoholic extract of tumeric previously mixed with liquefied fat to which a solution of indigo carmine has been added (25).

Dr. P. G. Unna, professor of dermatology at Hamburg University, has been very active in his work, and abstracts, articles and formulæ of skin preparations bearing his name have constantly appeared in pharmaceutical journals. One of his creations is Unguentum Caseini, a non-greasy, thin base for ointments, able to be washed from the skin with water. This was a very agreeable, long desired preparation.

It might seem that some of the ancients had queer and useless formulæ for their ointments and kindred masses, or messes, but we find, as late as 1881, a Bullfrog Ointment made by boiling a pint of milk, then boiling a live bullfrog to a paste therein, finally discarding the bones. It was recommended for sore breasts (26). For

hemorrhoids, horse chestnut ointment was brought forth in 1909 (27). We also find ointment of poplar buds, marshmallow ointment and cucumber cerate prescribed for various ills and ailments. Stronger Cerate, of 1872, was a mixture of liquid carbolic acid, olive oil, yellow wax and paraffin (28).

A widespread cult of devil worship in western Europe sponsored these three "Witches' Ointments":

1. Parsley water of aconite, poplar leaves and soot.

2. Water parsnip, sweet flag, cinquefoil, bat's blood, deadly nightshade.

3. Baby's fat, juice of water parsnip, aconite, cinquefoil, deadly nightshade and soot.

Parsley and parsnip probably refer to poisonous forms of umbellifera. The belief was that witches anointed themselves with these decoctions to make broomstick flights (29).

The Philadelphia College of Pharmacy and Science has, as a permanent exhibit in its Dispensing Pharmacy Laboratory, a corner of the original fixtures of a store founded in Philadelphia in 1812. Here can be found an entire compartment that was devoted to the storage of Breast Salve, and containers of various descriptions bearing the strange labels, Ung. Gallic., Lilly White Ointment, Ung. Acet., Ung. Psor., Ung. Altheae and Ung. Storam.

Some interesting and vital statistics and facts have been compiled by workers in the fields of ointments and cerates. C. Braubach states that ointments can be analyzed and formulæ duplicated by a systematic order of analysis, as follows:

1. Physical examination, color, odor, consistence, taste, etc.

2. Microscopic examination.

3. Preliminary tests.

4. Quantitative and qualitative chemical tests.

5. Preparation of a duplicate, and comparison with the original (30).

A knowledge of densities of various standard ointments aids in testing for purity. The following table of densities has been compiled:

Ung. Acidi Borici	0.86	Ung. Aquae Rosae	0.94
Ung. Hydrarg. Amm.	0.90	Ung. Sulphuris	1.00
Ung. Hydrarg. Flav.	0.97	Ung. Zinci Oxidi	1.23
Ung. Hydrarg. Dil.	1.12	Ung. Belladonnae	0.95
Ung. Hydrargyri	1.76	Ung. Stramonii	0.95
Ung. Iodi	1.03	Ung. Gallae	0.93
Ung. Iodoformi	1.01	Ung. Acidi Tannici	0.95
Ung. Phenolis	0.94	Ung. Chrysarobini	0.93
Unguentum	0.93	Ung. Picis Liquidi	0.99 (31)

A search through all editions of the Pharmacopœia of the United States and the National Formulary reveal the following facts:

U. S. P.

Issue	Date	Number of cerates official	Number of ointments official
First	1820	17	20
Rev. I	1830	10	20
Rev. II	1840	9	23
Rev. III	1850	10	25
Rev. IV	1860	10	23
Rev. V	1870	10	29
Rev. VI	1880	8	26
Rev. VII	1890	6	23
Rev. VIII	1900	6	24
Rev. IX	1910	3	20
Rev. X	1920	3	18

It is interesting to note that in the first five pharmacopœias, simple ointment was white, the next three were yellow, then two white and the most recent yellow. In the 1850 edition Mezereon Ointment appeared for the first time, to be deleted in the next issue, reappearing in V and VI, but again missing after that. Chrysarobin Ointment was first official in 1880. The 1860 edition included a Tobacco Ointment.

N. F.

Issue	Date	Number of cerates official	Number of ointments official
I	1889	1	5
II	1896	3	8
III	1906	1	6
IV	1916	3	12
V	1926	3	19

The N. F. III also contained, in a separate grouping, five ointments dismissed from the former U. S. P.

Certain of these preparations in the two American books of pharmaceutical standards enjoy international reputations, as indicated in this list.

U. S. P. X

Unguentum—5, 7
Unguentum Acidi Borici—1, 3, 4, 7
Unguentum Acidi Tannici—1
Unguentum Aquae Rosae—3, 5
Unguentum Belladonnae—4, 6
Unguentum Chrysarobini—1
Unguentum Hydrargyri Ammoniati—1, 7
Unguentum Hydrargyri Fortius—1, 4
Unguentum Hydrargyri Mite—2, 4, 6, 7
Unguentum Oxidi Flavi—3, 4, 6, 7
Unguentum Iodi—4
Unguentum Iodoformi—4
Unguentum Phenolis—1, 4, 6
Unguentum Picis Pini—4, 7
Unguentum Sulphuris—1
Unguentum Zinci Oxidi—1, 3, 4, 6, 7

N. F. V

Unguentum Camphorae—7
Unguentum Capsici—1
Unguentum Hydrargyri Chloridi Mitis—1, 4
Unguentum Hydrargyri Oxidi Rubri—3, 6, 7
Unguentum Plumbi Iodidi—4
Unguentum Potassii Iodidi—3, 6, 7

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1. British Pharmacopœia, 1932
2. Austrian, 1906
3. German, 1926
4. Spanish, 1929
5. Belgian, 1930
6. Italian, 1929
7. Japanese, 1922

George F. Reddish and H. Wales, members of the United States Department of Agriculture, Food, Drug and Insecticide Administration, found that only six of the 12 U. S. P. X, and four of the 14 N. F. V ointments ordinarily considered antiseptic had antiseptic action under the conditions of tests conducted upon them. Furthermore, it was shown that the antiseptic action of such a preparation cannot be predicted from the known action of its constituents (32).

An interesting study was made by Professors E. Fullerton Cook and Harvey P. Frank, members of the faculty of the Philadelphia College of Pharmacy and Science, to determine how many of the therapeutic items dropped by the U. S. P. X, but official in either the U. S. P. VIII or IX, were still being used. Through a questionnaire sent to pharmacists throughout the country, 237,853 prescriptions were studied, and the following facts were gleaned, pertinent to this study of cerates and ointments. In the 237,853 prescriptions,

Ung. Hydrargyri Nitratis was used 141 times,
Ceratum Resinae Comp. was used 108 times,
Ung. Stramonii was used 108 times,
Ceratum Plumbi Subacetatis was used 69 times,
Ung. Hydrargyri Oxidi Rubri was used 73 times,
Ung. Potassii Iodidi was used 36 times,
Ung. Zinci Stearatis was used 34 times,
Ceratum Camphorae was used 18 times, and
Ung. Veratrinae was used once. (33)

At the 1901 convention of the New Jersey Pharmaceutical Association, G. W. Parisen reported that in 4000 prescriptions surveyed by him, fifty-six ointments were prescribed.

The senior students at the Philadelphia College of Pharmacy and Science, during the 1930-31 session, were requested to bring to the Operative Pharmacy Laboratory copies of prescriptions filled in the stores in which they worked. Cold prescriptions, powders, capsules and ointments were among the classes of prescriptions studied. Harrison R. Boggs, an instructor, compiled the following statistics from the ointment prescriptions, of which there were 1301 submitted for study. They were checked against the drugs and preparations of the U. S. P. X, and the N. F. V, and in the 1301 prescriptions were found the following items used as many times as indicated by the number after the name:

U. S. P. X

Acetanilidum, 10
Acidum Benzoicum, 14
Acidum Boricum, 109
Acidum Salicylicum, 180
Acidum Stearicum, 1
Acidum Sulphuricum, 1
Acidum Tannicum, 15
Adeps, 12
Adeps Benzoinatus, 52
Adeps Lanae, 57
Adeps Lanae Hydrosus, 248
Aethylis Benzocaine, 3
Aethylis Anesthesin, 2
Alcohol, 4
Alumen, 4
Amylum, 68
Aqua, 2
Aqua Destillata, 3
Argenti Nitras, 3
Atropina, 2
Balsamum Peruvianum, 36
Betanaphthol, 22
Bismuthi Subcarbonas, 4
Bismuthi Subgallas, 1
Bismuthi Subnitras, 30
Bismuthi Subsalicylas, 1
Calcii Carbonas Precipitatis, 1
Camphora, 96
Cantharis, 1
Capsicum, 2
Cera Alba, 3
Cera Flava, 3
Ceratum, 3
Chloralis Hydras, 19
Chrysarobinum, 16
Cocaina, 6
Cocaina Hydrochloricum, 6
Codeina Sulphas, 1
Creosotum, 2
Cresol, 1
Creta Preparata, 1
Extractum Belladonnae, 24

Extractum Cannabis, 1
Extractum Hyoscyami, 4
Extractum Stramonii, 3
Fluidextractum Ergotae, 1
Galla, 3
Glycerinum, 9
Glyceritum Amyli, 1
Glyceritum Boroglycerini, 2
Guaiacol, 22
Hydrargyri Chloridum Corrosivum, 1
Hydrargyri Chloridum Mite, 46
Hydrargyri Oxidum Flavum, 31
Hydrargyrum Ammoniatum, 123
Iodoformum, 7
Iodum, 3
Linimentum Calcis, 2
Liquor Epinephrinae Hydrochloridi, 1
Liquor Formaldehydi, 2
Magnesii Oxidum, 1
Menthol, 124
Methylis Salicylas, 62
Oleoresina Capsici, 2
Oleum Anisi, 1
Oleum Cadinum, 24
Oleum Caryophylli, 1
Oleum Cinnamomi, 1
Oleum Eucalypti, 7
Oleum Juniperi, 1
Oleum Lavendulae, 2
Oleum Olivae, 14
Oleum Ricini, 8
Oleum Sassafras, 1
Oleum Sinapis Volatile, 7
Oleum Terebinthinae, 3
Opium Pulveratum, 14
Paraffinum, 1
Petrolatum, 435
Petrolatum Album, 82
Phenol, 175
Phenol Liquefactum, 30
Pilocarpinae Hydrochloridum, 1
Pilocarpinae Nitras, 1
Pix Pini, 6
Plumbi Acetas, 4
Potassa Sulphurata, 1
Potassii Carbonas, 2
Potassii Iodidum, 1
Procainae Hydrochloridum, 1
Resorcinol, 126
Sapo Mollis, 5
Sevum Preparatum, 2
Sodii Benzoatum, 1
Sodii Bicarbonas, 3
Sodii Boras, 3
Sodii Chloridum, 1
Sodii Salicylas, 4
Styrax, 1
Sulphur Lotum, 2
Sulphur Praecipitatum, 74
Sulphur Sublimatum, 55
Talcum Purificatum, 3
Terra Silicata Purificata, 1
Thymol, 2
Thymolis Iodidum, 12
Tinctura Aconiti, 3
Tinctura Belladonnae, 1
Tinctura Cantharidis, 1
Tinctura Ferri Chloridi, 1
Tinctura Iodi, 2
Ulmus, 1
Unguentum, 17
Unguentum Acidi Borici, 41
Unguentum Acidi Tannici, 2
Unguentum Aquae Rosae, 106
Unguentum Belladonnae, 97
Unguentum Chrysarobini, 2
Unguentum Gallae, 7
Unguentum Hydrargyri Ammoniati, 55
Unguentum Hydrargyri Fortius, 32
Unguentum Hydrargyri Mite, 6
Unguentum Hydrargyri Oxidi Flavi, 40
Unguentum Iodi, 9
Unguentum Iodoformi, 1
Unguentum Phenolis, 6
Unguentum Picis Pini, 12
Unguentum Plumbi Oleatis, 2
Unguentum Sulphuris, 31
Unguentum Zinci Oxidi, 149
Zinci Oxidum, 159

A total of 130 items used 3421 times.

N. F. V

Part I

Cataplasma Kaolini, 1
Ceratum Plumbi Subacetatis, 4
Ceratum Resinae Compositum, 15
Extractum Conii, 1
Extractum Ergotae Aquosum, 3
Extractum Opii, 4
Liquor Picis Carbonas, 8
Pasta Zinci, 7
Unguentum Bituminis Sulphonati, 1
Unguentum Ichthyol, 10%, 75 (Ung. Bitumen Sulphonatum)
Unguentum Hydrargyri Chloridi Mitis, 4
Unguentum Hydrargyri Nitratis, 8
Unguentum Hydrargyri Oxidi Rubri, 1
Unguentum Iodi Denigrescens, 2
Unguentum Resorcinolis, Compositum, 7
Unguentum Stramonii, 8

A total of 16 items used 149 times.

Part II

Ammonium Sulphoichthyonate, 1
Ammonium Ichyosulphonate, 3
Bitumen Sulphonatum, 1
Ichthyol, 125 (Bitumen Sulphonatum)
Calamina Preparata, 39
Dextrinum Album, 1
Hydrargyri Oxidum Rubrum, 3
Kaolinum, 2
Oleum Bergamottae, 1
Oleum Betulae Emp. Rect., 1
Oleum Thymi, 1
Pix carbonis, 10

A total of 12 items used 188 times.

In the Charters Report on Basic Material for a Pharmaceutical Curriculum (1927), there is a table containing 1,973 articles used in prescriptions, with their frequency of use. Among the first 10 per cent., ranked according to usage, we find, in this order, Unguentum Zinci Oxidi, Unguentum Aquae Rosae, and Unguentum Hydrargyri Ammoniati. The rest of the ointments listed, of which there were 36, fell below the first 10 per cent. There were four cerates listed, none of which was used frequently enough to come in the first group.

So closes this story of cerates and ointments, recounting facts both interesting and statistical about a very important class of pharmaceutical preparations.

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A Few of the Famous Finds by Pharmacists

The Discovery	The Discoverer	The Time	The Place
Cold Cream	Galen	2d Century A.D.	Greece
Glauber Salt (Sodium Sulphate)	Johann Rudolph Glauber	1603	Hungary
Rochelle Salt (Sodium and Potassoum Tartrate)	Peter Seignette	1672	France
The Hydrometer	Antoine Baume	18th Century	France
Soda Water	Venel	1750	France
Beet Sugar	Marggraff	1747	Germany
Chlorine	Carl Scheele	1774	Sweden
Oxygen	Carl Scheele	1775	Sweden
Glycerin	Carl Scheele	about 1778	Sweden
Nicotine	Louis Vacquelin	1820	France
Iodine	Bernard Courtois	1811	France
Morphine	Frederick Serturner	1815	Germany
Quinine	Pelletier and Caventou	1820	France
Caffeine	Jean Robiquet	1821	France
Hydrogen Peroxide	Louis Thenard	1818	France
Bromine	Antoine Joseph Balard	1826	France
Zymase in Yeast	Bechamp	1856	France
Cocillana	H. H. Rusby	1885	Bolivia

(Abstracted from *The Popular Science Lecture* "Famous Finds by Pharmacists," delivered at the Philadelphia College of Pharmacy and Science, April 4, 1934, by John E. Kramer, Ph. G., Registrar of the College.)

A METEOROLOGICAL ADVENTURE IN PHARMACOLOGY

By David I. Macht, M. D.

Pharmacological Research Laboratory, Hynson, Westcott & Dunning, Incorporated, Baltimore, Maryland

THE tropical storm which struck Maryland and other Middle Atlantic States on August the twenty-third gave me an opportunity to put to a curious test an experimental investigation which I have been carrying on for a number of years, the results of which are of considerable interest not only to the physician who prescribes drugs and to the pharmacist who prepares them but also to the layman who uses them for medicinal purposes.

The action of a drug on a living organism is not as simple a matter as one might at first suppose. The same substance which is administered to a patient or an animal for its beneficial or medicinal effect, under certain conditions, may act as a poison. Indeed, every drug is also a poison, and whether a given substance will act as medicine or harmful agent will depend on various factors and conditions. I have discussed these various factors at length in a paper published elsewhere (1). In the first place, the difference between the therapeutic and toxic action of a drug will depend on the patient; for instance, on the age, the sex, the race, the physical condition of the subject, whether human being or lower animal. In the second place, its poisonous or therapeutic action will depend on the chemical itself; i. e., its dosage, the form in which it is administered, etc. In the third place, certain external conditions may profoundly influence the action of drugs. Thus, the temperature, the season of the year, the method of administration, the presence or absence of sunlight and ultraviolet rays may produce marked variations in the pharmacological action of different drugs. In addition to these sets of factors, or "three dimensions of pharmacodynamics," as I like to call them, a fourth one must be considered; namely, the time factor. When, how long, how frequently, and *simultaneously* with what other substances a given drug is administered to a patient are vital questions to be considered in this connection.

In the present communication, I wish to dwell on a single factor belonging to what we may call the third dimension of pharmacodynamics, which plays an important role in the action of certain drugs.

For the last seven years we have been making daily systematic observations and records of the barometric pressure, the humidity

and other meteorological conditions in my laboratory and correlating these findings with the action of certain drugs we have been studying. Our observations were directed particularly to the pharmacological and toxicological effects of our most important heart drug, digitalis. It is well known that digitalis preparations vary so greatly in toxicity that a reliable product can be obtained only when it has been assayed and its potency has been established. This must be done by biological methods. The most reliable pharmacological or biological method for standardizing digitalis tincture and other preparations of digitalis leaf is the so-called Hatcher-Brodie cat method. Briefly, this consists in determining the quantity of diluted tincture of digitalis which is required to kill the animal when injected at regular intervals into the femoral vein of a cat under ether anesthesia. The quantity of a tincture, diluted 1:10 with physiological salt solution, divided by the weight of the animal, gives the lethal dose of the preparation in so-called cat units. A standard tincture of digitalis should kill a cat when injected in doses of 10 cc. of the dilution, or one cc. of the original tincture per kilo weight of cat. Such assays on cats have been performed by me and my assistants for many years in my laboratory, and we have noted that marked changes in atmospheric conditions, particularly in the barometric pressure, influence the results obtained. We have found, furthermore, that when the *humidity* undergoes a marked change a difference is also observable in the results of digitalis assay. The changes in barometric pressure, however, were by far the most important in producing such variations. Thus, we have noted that a given tincture of digitalis became more toxic when the barometer fell suddenly during a severe storm than it was with the barometer at a high level. In other words, it takes less digitalis per kilo weight to kill a cat during a storm with the barometer rapidly falling than is required for a lethal dose of the same tincture in fine weather with high barometric pressure. Such observations were made repeatedly in our laboratory and have been confirmed also by experiments performed in the mountains where the barometric pressure is lower, by virtue of the high altitude, than it is at sea level, without regard to changes in the weather.

On Wednesday, August 23, 1933, during the severe tropical storm in Baltimore, the barometer made a very rapid and profound fall, as indicated by the barograph; and we decided to put our previous experiences to a new test. We selected a tincture of digitalis which we had assayed before at 11 A. M., on July 3, 1933. At that time the weather was cloudy but there was no storm. The barometer

read 31.8 in., and the relative humidity at noon was 70 per cent. Assay of the tincture was made by the cat method and it was found on July the third that the preparation was in exact conformity with the U. S. P. standards, 10 cc. of the diluted tincture, equivalent to 1 cc. of the original tincture of digitalis per kilo weight of the cat, being the lethal dose.

On August the twenty-third, about seven weeks after the original assay, when the storm was at its height and the barometer fell to its lowest level, I returned to my laboratory at seven o'clock in the evening and, with the assistance of my son, Moses B. Macht, assayed the same tincture on a cat. The barometric reading then, as indicated by the barograph in the laboratory, was 29.2 in., or 745 mm.; the relative humidity was 76; and the storm was still raging. The lethal dose of the tincture was found to be 7.84 cc. per kilo weight of cat. In other words, the potency or toxicity of the tincture was much greater then than it was when originally assayed on July the third. Several days later, on August the twenty-eighth, when the storm had passed and the weather was again normal, another experiment was made. The same tincture, which was now nearly eight weeks old, was assayed once more; and it was found that the killing dose was 11.4 cc. per kilo weight of cat. The barometric pressure at that time was 766 mm., or 30.25 in.; and the relative humidity was 65 per cent. Thus we found that the tincture was actually weaker than it was on July the third, which was not at all surprising. It had stood at room temperature for nearly eight weeks through the hottest days of the summer, hence it had deteriorated quite a bit.

The experiments described above therefore strikingly corroborated all the previous observations made in our laboratory. In a brief communication to the American Physiological Society, 1931, I have already called attention to my earlier experimental findings (2).

Another example of a similar effect produced by a severe storm may be cited from our records of April 16, 1929. At that time a heavy rainstorm reached Baltimore; the barometer fell to 29.2 in. A tincture of digitalis which was normally found to have a killing power of 13.4 cc. was assayed at the height of the storm, and its potency was found to be 10.5 cc. per kilo weight of cat.

An even more striking illustration of the effect of barometric pressure on the action of digitalis is indicated by the findings we

have collected from experiments performed at high altitudes. Thus, for instance, in one series of experiments, which I and my assistants made in the Blue Ridge Mountains on August 9, 1927, we found that the killing dose of a dilution of a tincture of digitalis was 8.0 cc. per kilo weight of the animal. The same tincture assayed in Baltimore showed a potency of 10.6 cc. per kilo weight of cat. Two other expeditions made by me to the Maryland State Sanatorium in the Blue Ridge Mountains yielded similar results. Through the courtesy of a colleague, a tincture of digitalis was assayed in Denver, Colorado; and the killing dose was found to be 10.0 cc. per kilo weight of cat. The same tincture assayed simultaneously in Baltimore under the same conditions gave the killing dose as 11.2 per kilo weight of cat. Finally, several series of experiments were performed for me by Professor Jarisch, head of the pharmacological laboratory, University of Innsbruck, and again confirmed the findings made in other mountain investigations. In that series of experiments a weak tincture of digitalis was employed. This tincture, assayed on cats in Baltimore, gave the lethal dose of 13.8 cc. per kilo. The same tincture, repeatedly assayed by Professor Jarisch in the Alps, gave a killing dose of 12.7 cc. per kilo. After these data had been collected and published, as mentioned above, it was gratifying to find that the results obtained were confirmed by Lehman and Hanzlik, who tested the toxicity of digitalis at high altitudes by a new method (3).

It is quite evident from the preceding data that the potency of digitalis tincture is modified by changes in meteorological conditions and particularly by changes in the barometric pressure. When the barometer is low, the potency of digitalis is more marked. These variations are not due to any deterioration of the drug itself, as is proved by the simultaneous assay of identical preparations of digitalis leaf at sea level and in the mountains. The changes are due to a difference in physiological reaction of the animal or subject to which the drug is administered; and, on second thought, these findings are not at all surprising. We know that the ascent of mountains and flight in airships profoundly affects the physiological functions of men and animals, and particularly their circulation and respiration. It is these changes which render the animal more responsive to such a powerful heart drug or poison as digitalis.

The foregoing specific observations made with digitalis are of general scientific interest because if the toxicity of this one drug is modified by atmospheric and meteorological conditions, the pharma-

cological action of other drugs will doubtless be similarly affected. Indeed, scientists are beginning to appreciate the important role played by varying weather conditions and accompanying changes in barometric pressure when considering various clinical diseases. The profound changes in circulation and respiration produced by high altitudes have been studied by Barcroft and his co-workers, (4) and, more recently, by Schneider and Clarke (5). C. S. Smith found that low barometric pressure favors water retention in the tissues (6). Rentschler, Vanzant and Rowntree found a correlation between changes in the barometric pressure and the severity of arthritic pains (7). Again, Hopmann (8) claims that acute exacerbations of circulatory disease and death from heart failure are more liable to occur when the barometer is at a low level. Of course, it is common knowledge that neurotic and psychiatric patients are profoundly affected by changes in the weather; and, recently, Peterson (9) reported that there are meteorological reactions in blood pressure, growth of nails and other physiological functions of the human body.

Although the influence of barometric pressure and other meteorological phenomena on physiological function has received considerable attention on the part of investigators in recent years, such studies have never been made in relation to the effect of the same conditions on drug action. The present contribution is the first of its kind to deal with the influence of barometric pressure on the action of an important drug on higher animals. It would seem that the number of hitherto unrecognized conditions playing a role in modifying the action of drugs and medicines is much greater than has been supposed so that the modern pharmacologist may well ascribe a new significance to Hamlet's words:

"There are more things in heaven and earth, Horatio,
Than are dreamed of in your philosophy."

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SCIENTIFIC AND TECHNICAL ABSTRACTS

Compiled by Arthur Osol, Ph. D.

The Estimation of Official Hypophosphites. F. Vieböck and K. Fuchs. *Pharm. Monatshefte. 15,* 37-39 (1934). A method is proposed for the estimation of hypophosphites whereby the latter are oxidized with bromine to the corresponding primary phosphates, four equivalents of hydrobromic acid and one of primary phosphate ion being formed from one equivalent of hypophosphite. The hydrobromic acid acidity is determined by titration with alkali using methyl orange indicator and, as an additional check, the primary phosphate ion is converted to the secondary ion by titration with alkali in the presence of phenolphthalein indicator. If the hypophosphite is pure, the ratio of the quantities of alkali should be 4 to 1.

The detail of the analysis of sodium hypophosphite follows: Approximately 0.5 gram is weighed accurately and dissolved in sufficient water to make 100 cc. An aliquot of 10 cc. is heated to 60 degrees and treated with 10 cc. of saturated bromine water. After one minute the mixture is gradually heated to boiling, more bromine being added if necessary. Finally, the mixture is boiled until the excess of bromine is expelled, cooled and titrated with N/10 alkali using methyl orange indicator. Several grams of NaCl are then added, the mixture cooled and titrated with N/10 alkali using phenolphthalein indicator. The calculation of the hypophosphite content is made by dividing the number of cc's of alkali required in the first titration by 4 and multiplying by the appropriate factor which is 0.010605 for $NaH_2PO_2.H_2O$. For KH_2PO_2 the factor is 0.010404.

In order to prevent the formation of tertiary phosphate in the case of $Ca(H_2PO_2)_2$, the calcium ion is precipitated by adding potassium oxalate prior to the second titration. For this salt the factor is 0.008506. The same treatment is used to prevent the formation of manganese hydroxide in the estimation of $Mn(H_2PO_2)_2$. For the latter, the factor (expressed as $Mn(H_2PO_2)_2.H_2O$) is 0.009246. Excellent results were obtained in the analyses of the above salts.

A Volumetric Method for the Estimation of Luminal and Veronal in Their Sodium Salts. F. Vieböck and K. Fuchs.

Pharm. Monatshefte. 15, 39-40 (1934). It is pointed out that the estimation of the alkalinity of the sodium salts of luminal and veronal offers no conclusive evidence of the luminal and veronal content. A method of analysis is proposed in which (1) the quantity of standard acid required to neutralize the alkalinity is determined and (2) the content of luminal and veronal is determined based upon their reaction with two equivalents of silver nitrate in the presence of two equivalents of alkali. The reaction is as follows:

$$\left.\begin{matrix}\text{(Luminal Sod.)}\ C_{12}H_{11}O_3N_2Na \\ \text{(Veronal Sod.)}\ C_8H_{11}O_3N_2Na\end{matrix}\right\} + NaOH + 2AgNO_3 =$$

$$\left.\begin{matrix}C_{12}H_{10}O_3N_2Ag_2 \\ C_8H_{10}O_3N_2Ag_2\end{matrix}\right\} + 2NaNO_3 + H_2O$$

The following method of analysis is suggested. (1) The Determination of Alkali. 0.2 gram of luminal sodium is dissolved in 25 cc. of water. The solution is titrated with N/10 H_2SO_4 using methyl orange indicator. (7.5 to 7.8 cc. required).

(2) Determination of Luminal. The solution from (1) is heated to expel CO_2 and a measured quantity of N/10 carbonate-free alkali added. If 7.5 cc. acid were required in (1), 14.0 to 14.5 cc. alkali are added at this point (in genera' 0.5 to 1.0 cc. less than double the titration in part one). After all of the luminal has dissolved, approximately 25 cc. of N/10 $AgNO_3$ are added (about 5 to 10 cc. more than double the quantity of acid required in part one), followed by 0.5 to 1.0 gram of sodium salicylate (to precipitate excess $AgNO_3$) and the mixture titrated with N/10 NaOH using phenolphthalein indicator. Each cc. of N/10 alkali required in part 2 corresponds to 0.012755 gram of luminal sodium (for veronal sodium the factor is 0.010305). If the preparation is pure, exactly twice as much alkali should be required in (2) as in (1). Control analyses on luminal and veronal indicate that the method is accurate.

Volumetric Determination of Chlorate. K. Glew. *Zeit. anal. Chem. 95,* 385-392 (1933). Through *Analyst, 59,* 203 (1934). The solution of the chlorate (about 0.25 gram) in 100 to 150 ml. of N sulphuric acid is treated with an excess of 0.1 N arsenite solution. The air is expelled from the flask by addition of 2 to 3 grams of sodium bicarbonate in several portions. The solution is then treated with 3 drops of 0.01 M osmium tetroxide solution and 3 drops of 0.01

M ferroin (ferro-*o*-phenanthrolin), and titrated, drop by drop, with 0.1 N ceric sulphate solution, admission of air being avoided. As a check, 5 ml. of the 0.1 N arsenite solution may be added to the titrated liquid; these should consume another 5 ml. of 0.1 N ceric sulphate solution. The procedure gave positive errors of about 0.2 per cent. The presence of large amounts of perchlorate and small quantities of chloride is immaterial.

Saponins as Emulsifiers in Practical Pharmacy. Wolfgang Brandrup. *Pharm. Zentralhalle. 75,* 129-30 (1934). The author gives a resume of some of the properties and uses of saponins. Suspensions made with the aid of saponins are much more stable than suspensions containing the same concentration of gums, gelatin, etc. Saponin possesses an advantage over soaps in being entirely neutral and inert. Lampblack suspensions prepared with saponins produce homogeneous, clear, brownish-black solutions which are readily flocculated by a little mineral acid. The solutions strongly adsorb toxins and bacteria and are suited for the removal of color from technical products. Other amorphous or microcrystalline substances such as blood and wood charcoals, or amorphous elements as tungsten, nickel, palladium and platinum, as well as such amorphous compounds as calomel and zinc oxide may be prepared in stable aqueous suspensions or colloidal solution in the same manner.

The saponin described is a purified glucoside obtained from Saponaria, easily soluble in water and foaming, considerably. The emulsifying property of saponins has long been used in preparing emulsions of cod liver oil, castor oil, balsam of copaiba, santal oil and oil of chenopodium. Saponins decrease the surface tension of water and increase the surface tension of oils. No directions are given for preparing emulsions.

A Review of the Causes of Reactions Following Intravenous Injections of Glucose and Normal Saline. Kent E. Darrow. *Journal-Lancet. 54,* 65 (1934). Through *Squibb Abstract Bulletin. 7,* 371 (1934). The majority of reactions following intravenous injections of glucose and normal saline solution are undoubtedly due to pyrogen-contaminated water. The elimination of this and other causes may be realized by following: (1) Use only C. P. standard drugs of at least U. S. P. standards. (2) Use only pure gum stoppers and tubing, and if new, wash with soap and water and rinse

with distilled water and then soak in 4 per cent. NaOH one hour. Wash thoroughly and soak in distilled water before sterilizing. No tap water should be used after the original washing, then only pyrogen-free distilled water. (3) Use only hard glassware, Jena or Pyrex. (4) Still should be block tin or glass-lined. (5) Give solution at 100-110 degrees F. at the vein. About 120 degrees in the container will usually be the right temperature at the vein. (6) Glucose solutions properly prepared and filtered at least five times through French filter paper are autoclaved without vacuum for 40 minutes at five pounds pressure. High pressures and temperatures cause caramelization. Salines can be autoclaved without vacuum for 20 minutes at 15 pounds pressure. (7) Cotton or gauze plugs should not be used in flasks unless part of the plug is covered with unlacquered cellophane. When glass ampules are used, allow a little time to elapse before opening ampule to let the glass particles settle in the bottom. (8) Never inject faster than 5-10 cc. per minute. Concentrated solutions should be injected slower than more dilute ones. (9) Use only high grade filter paper. (10) Individual susceptibility, fortunately rare, cannot be eliminated. (11) and (12) Use only pyrogen-free distilled water that is sterilized fresh from the still. Use a water spray trap in still. Test for pyrogen by Carter's test: Heat 100 cc. distilled water to the boiling point in a clean pyrex beaker that has been rinsed in distilled water. Acidulate with 10 cc. of 10 per cent. H_2SO_4, then add 0.1 cc. of 0.5 N $KMnO_4$ and continue boiling for 10 minutes. The faint pink color should remain in the solution if no pyrogen is present. If there is pyrogen present, the color will disappear, as pyrogen is a reducing body. No reactions were observed by the author when pyrogen-free distilled water was used, except in three cases where impure glucose was used.

The Dispensing of Papaverine Hydrochloride. Zaly. *Magyar Gyógyszerésztud. Társaság Értesitöje. 9,* 431 (1933) through *Pharm. Zentralhalle. 75,* 86 (1934). Alkaline sodium phenylethylbarbiturate (Sodium Luminal) or theobromine sodio-salicylate is frequently prescribed with acid papaverine hydrocholoride whereupon precipitation usually occurs. This may be prevented by the addition of tartaric acid or sodium tartrate in the proper proportion. Additional protection from precipitation is obtained by the addition of mucilage of acacia.

SOLID EXTRACTS

A prominent dermatologist and one rarely inclined to indulge in hairy persiflage is responsible for the statement that decayed teeth may cause falling hair, which only adds one more to the thousand causes already on record. But the time-honored quest for a way to return the cranial nap still goes on—and as devoid of results as ever.

Duprene is the new synthetic rubber heralded as the first really worthwhile substitute for the heaving juice of the Heveas. The chemist refers to it as a polymerized chlorobutadiene having the composition $(C_4H_5Cl)_n$ and it is said that it is more resistant to changes of age than ordinary rubber.

One of the easy ways out of difficulties under the old Food and Drug Act was for the lawbreaker to pay the fine and continue the malpractice, charging the puny fine to overhead. With the new bill this trick will not be available, for there is in the proposed law (S. 2800) a clause which permits federal officers to restrain manufacture after repeated offences.

All told sixteen cases of serious injury due to the use of paraphenylene diamine eyelash dyes have been recorded in recent medical literature. Eyelash and eyebrow dyes have been used for time immemorial in the cosmetic schemes of the speaker sex—Jezebel, the original hussy, is said to have circumscribed her eyes with stibium to enhance their goo-gooiness before she literally "went to the dogs."

But they seemingly had better sense in those days—they used a kohl or pigment and not a toxic, blinding dyestuff, such as above recorded. Which proves that we *do* need a sensible control even over our comic cosmetics.

One nationally known toothpaste concern has recently gone further and more berserk than the coiners of the silly phrase "remove

the film." They have saluted Salome's seven veils with the marvelous discovery that toothstains might well adopt the song of the little girl of Conway—"We are seven." And, mind you, this paste will remove one or all of the seven, so specific and scientific is its "cleansing, emulsive and polishing" composition.

"To enable its salesmen to offer concrete evidence to druggists of the stains that foods, beverages and tobacco leave on teeth, the House of Colgate has supplied 150 salesmen with a small case containing the first photographic reproductions of seven of the most typical stains." !!!

The quotation is from a picayune and cheap piece of advertising trickery sent to the JOURNAL *under the following caption:*

"We are sending you this story at the request of one of our clients. It is submitted solely for its possible news value to you."

To which we say—that we hope they like the way we used it!

Hiram Johnson in the interest of his California votees and devotees, insisted upon introducing into the new food and drug bill a clause permitting the artificial coloring with dyes or gas of oranges and lemons to hide their rindy anemia. Ethylene gas which has been used successfully for this purpose is now found to be an effective means of removing the husks from walnuts when they fail to crack as they normally should.

"In the Spring a young man's fancy lightly turns to thoughts of love"—and the same season sends both young and old in search of snappy tonics.

And spring fever is not a joke after all, it now appears from latest medical research. It is actually a disease and physicians of the future will have to consider it as such and treat it "conscientiously with irradiated cod liver oil and sunshine, not with the sulfur and molasses of our fathers."

Spring fever, the disease, is a condition in which the body's stores of calcium are depleted.

And the vitamin laden oil from the cod is the finest calcium controller in all of the pharmacopœias.

Cyclopropane is another addition to the merry group of anaesthetic gases now available to the surgeon. Ethylene, acetylene and several others are now in successful use, yet most of them presenting explosive hazards.

Cyclopropane is now becoming popular in some hospitals because its use is not followed by nausea and also because it is relatively safe from explosion, and it has been prepared cheaply from certain constituents of natural gas, by western chemists, who have developed a process by which they have lowered its cost to a fraction of what it used to be.

France Honors Sir Henry Wellcome

The President of the French Republic has paid a notable tribute to medical and chemical research by conferring the honor of La Croix de Chevalier de la Légion d'Honneur upon Sir Henry Wellcome, LL. D., F. R. S., the Founder of the Wellcome Research Institution and its associated research laboratories and museums, in which are included The Bureau of Scientific Research, Physiological, Chemical and Entomological Research Laboratories, and The Museum of Medical Science and The Historical Medical Museum.

The research laboratories and museums, associated together in The Wellcome Research Institution, whose magnificent new building in the Euston Road, London (Eng.), occupies a site having a frontage of 360 feet, have by their original medical, chemical, physiological and historical researches contributed largely to international scientific knowledge, a fact which finds recognition in the honor bestowed upon the Founder by the Government of France.

Sir Henry Wellcome is a native of Wisconsin and was graduated at the Philadelphia College of Pharmacy and Science. He is President of Burroughs, Wellcome & Co. (U. S. A.), Inc., New York, in whose research and experimental laboratories much original work has been done.

MEDICAL AND PHARMACEUTICAL NOTES

Chloropicrin—a New Fumigant

Chloropicrin, trichloronitromethane, is a gaseous compound easily prepared by adding an aqueous solution of picric acid to chlorinated lime. During the war it was used in a most unsavory way as a tear gas and lethal weapon, too. It was used chiefly because of its peculiar property of causing vomiting when inhaled, thus inducing the soldier to remove his mask and expose himself to the action of gases which could not penetrate the mask. Chloropicrin was generally mixed with other gases, especially phosgene and diphosgene.

As a post-war development we now find it in use as a fumigant and insecticide, much more effective and certainly safer to use than hydrocyanic acid gas.

The advantages of chloropicrin as a fumigant are high toxicity to many species of insects and rats; fungicidal and bactericidal properties; complete freedom from fire and explosion hazards; low solubility in water; ability to penetrate bulk commodities; non-reactivity with metals, fabrics, and colors under fumigating conditions; and a pronounced odor and lachrymatory effect which usually effectively warn of its presence. Its disadvantages are slowness in action, as compared to hydrogen cyanide; tendency to act detrimentally on living plants and seeds; difficulty in removing its odor from fumigated commodities and spaces; and nauseating effect upon the operator. The combination of chloropicrin with carbon dioxide, found by Cotton and Young to be more toxic than chloropicrin alone to many insects, should prove useful in fumigating stored materials.

Vitamin C in Tomatoes

The suggestion has been made that in the apple the amount of vitamin C present in different species is related to the number of the chromosomes. This suggestion can readily be tested in tomatoes, for it is comparatively simple to obtain tomatoes with twice the normal number of chromosomes, and tetraploid varieties can be produced directly from diploid plants. At the suggestion of Prof. J. B. S. Haldane diploid and tetraploid tomatoes prepared by Dr. F. W.

Sansome of the John Innes Horticultural Institution have been examined for their vitamin C content, but no difference has been found between them in this respect. Tomato juice was found to have about one-fifth the potency of lemon juice.

A Standardised Preparation of Digitalin

The digitalin most commonly used in pharmaceutical practice is the water-soluble preparation known as Digitalinum Pulverisatum Purum Germanicum; it is a substance of very varying activity. If standardised it should be a useful preparation for subcutaneous or intramuscular injection, since strophanthin or crystalline digitalis glucosides are given by intravenous injection or by mouth; a substance which can be given by intramuscular injection has a great advantage for doctors in general practice.

Four samples of digitalin have been examined by comparison with the Standard Preparation of Powdered Digitalis, B.P., 1932, using both the frog and the guinea-pig methods. The potency of these samples expressed in units was found to vary from 250 to 55 units per gramme. The suggestion has been made that Digitalin should be adjusted by admixture with lactose so that the potency is always 80 units per gramme; of this standardised preparation 1 grain would contain 5 units, which approximates to the maximum dose for single administration of Powdered Digitalis and Tincture of Digitalis.—(From the Eighth Annual Report of the Pharmacol. Lab. of the Pharm. Soc. of Gr. Brit.)

Alcohol Effects

For those who wish to lecture upon temperance and for those who insist upon abstinence here is a summary of the effects of alcohol upon man individually and upon his collective estate. They have been compiled by *Science Service:*

1. Alcohol is a narcotic which, by depressing the higher centers, removes inhibitions.

2. Outside of the nervous system and the digestive tract, alcohol used as a beverage has little demonstrable effect.

3. It is a food, utilizable as a source of energy and a sparer of protein, but it is such only to a very limited extent.

4. It is improbable that the quality of human stock has been at all injured or adversely modified by the long use of alcohol, although the effects on the individual are often devastating.

5. The therapeutic usefulness and value of alcohol are slight.

6. It may be a comfort and a psychological aid to the aged.

7. It does not increase, and it sometimes decreases, the body's resistance to infection.

8. By releasing inhibitions, it makes for social ease and pleasure, and herein lies one of its great dangers.

9. Its effects are best studied by changes of conduct.

10. It impairs reason, will, self-control, judgment, physical skill, and endurance.

11. It may produce situations from which crime and social lapses result.

12. It is a frequent destroyer of health, happiness, and mental stability.

13. Its use commonly lowers longevity and increases mortality.

14. It is used primarily for its psychological effect as a means of escape from unpleasant reality.

15. It constitutes an important community health problem.

Anabasin—a Powerful Plant Insecticide

American chemists, striving to make something stronger than nicotine, synthesized a compound which they called "neonicotine." At the same time, Russian chemists extracted a most efficient insect poison from a common weed *Anabasis,* and called it anabasin. A comparison of the synthetic and the natural compounds showed them to be chemically identical.

Anabasis is a genus of dry-land weeds common in North Africa, Asia Minor and parts of Russia. There are about fifty species, of which only one, *Anabasis aphyllum,* has been investigated as a source of insect poison. The plant is related to such common American weeds as lamb's quarters, tumbleweed and greasewood.

Anabasin, is said to be a potent aphid-killer. It will also kill other insects, although for some of these uses it is not so effective as nicotine and that other recently developed insecticide, rotenone.

Azochloramide

Azochloramide, or N-N-dichloroazo dicarbonamide, is a new chlorine-containing antiseptic highly soluble in water and most other

solvents, recently described before the American Chemical Society by Dr. Franz C. Schmelkes and Henry C. Marks, industrial chemists of Belleville, N. J. They stated that it is highly stable, not being easily destroyed by heat, nor chemically weakened by substances that usually greedily seize upon chlorine-containing compounds. Blood serum and similar organic substances are especially troublesome in that way, weakening other antiseptics when they are used against bacteria. It was for germ-killing in the presence of such organic stuffs that the new chemical was suggested.

A Delicate Test for Lead

Lead, a poison against which our food, drugs and cosmetics have to be guarded with ever-increasing vigilance, is now made to betray its presence by the red blush it causes in a greenish solution of one of the aniline dyes, diphenyl-thio-carbazone, or "dithizone." The new test, which has the double advantage of being both delicate and quick, was described before the meeting of the Association of Agricultural Chemists by H. J. Wichmann, of the Food and Drug Administration, U. S. Department of Agriculture.

Food and drug analysts often have to determine whether or not a shipment of fruit is carrying more than the tolerated minimum of lead-spray residue. The hitherto quickest accurate lead-determining technique demanded several days.

The dye "dithizone" has been known for a long time; it was first described in Germany by the famous chemist Emil Fischer. Fischer even noted the red precipitate caused by the addition of lead. But so far as is now known, nobody had previously discovered the beautifully delicate gradations of color, from the solution's original green through blue and purple to cherry red, that occur when a lead solution treated with ammoniated cyanide is added to a solution of the dye containing chloroform. By matching hues with other tubes containing a known amount of lead-dithizone, the chemist can now determine in a very short time exactly how much lead an "unknown" sample contains. The error involved in this operation has been determined as within 4 per cent.—*Science Supplement*, Nov., 1933, p. 7.